

IN THE CLAIMS:

Claims 1-39 (Canceled).

40. (Currently Amended) A vane pump comprising:

a housing having an interior chamber with a rotor rotatably mounted therein;
a cam pivotally mounted about the rotor and defining a pumping chamber within the
interior chamber, the pumping chamber having an inlet arc region, a discharge arc region and
sealing arc regions angularly extending at least about 30 degrees positioned between the inlet
and discharge arc regions;

a plurality of vane elements slideably supported within a plurality of radially
extending slots formed in the rotor such that as the rotor rotates a radially outward
centrifugal force is imparted to each vane element, wherein in the sealing arc regions the
radially outward centrifugal force positions the vane elements radially outward;

a sideplate mounted within the interior chamber having first and second opposing
surfaces, the first surface being disposed adjacent the rotor of the vane pump, the first
surface defining channels in fluid communication with the inlet and discharge arc regions for
supplying pressurized fluid within the plurality of radially extending slots for providing an
undervane force to balance each vane element so as to balance forces imparted thereon when
each vane element is in the sealing arc region.

41. (Previously Presented) A vane pump as recited in Claim 40, wherein the
pressurized fluid flows radially inwardly to the plurality of radially extending slots.

42. (Previously Presented) A vane pump as recited in Claim 40, wherein the first
surface of the sideplate also forms a plurality of restrictors, each restrictor dimensioned
and configured to limit an amount of pressurized fluid passing within the plurality of
radially extending slots.

43. (Previously Presented) A vane pump as recited in Claim 40, further comprising a second sideplate axially spaced from the first sideplate, the second sideplate having opposing first and second surfaces wherein the first surface of the second sideplate is adjacent the rotor.

44. (Previously Presented) A vane pump as recited in Claim 40, wherein each sideplate is spaced from the rotor so as to allow frictionless rotation of the rotor.

45. (Previously Presented) A vane pump as recited in Claim 40, wherein the discharge arc region is approximately 150 degrees.

46. (Previously Presented) A vane pump as recited in Claim 40, wherein the inlet arc region is approximately 150 degrees.

47. (Currently Amended) A vane pump comprising:

- a) a pump housing defining a cylindrical interior chamber,
- b) a cam member disposed within the interior chamber of the pump housing and having a bore extending therethrough and defining a circumferential surface of a pumping cavity, the circumferential surface of the pumping cavity including a discharge arc segment, an inlet arc segment and seal arc segments separating the inlet arc segment and the discharge arc segment from one another;
- c) a cylindrical rotor member mounted for rotational movement within the bore of the cam member about an axis, the rotor member having a central body portion which includes a plurality of circumferentially spaced apart radially extending vane slots formed therein, each vane slot supporting a corresponding vane element mounted for radial movement therein, each vane element having a radially outer tip surface adapted for slideably engaging the circumferential surface of the pumping cavity and a radially inner undervane portion within each vane slot;

- d) a mixing chamber defined within the pump housing and positioned for fluid communication with the radially inner undervane portion of each vane element and providing a pressure thereto when the vane elements passes through the seal arc segments, the mixing chamber being in fluid communication with a first pressure source and a second pressure source, wherein the first pressure source is associated with the discharge arc segment of the pumping cavity by way of a first restrictor passage, and the second pressure source is associated with the inlet arc segment of the pumping cavity by way of a second restrictor passage; and
- e) valve means associated with the first and second restrictors, respectively, for selectively controlling a volume of fluid communicated to the mixing chamber by the first and second pressure sources, respectively.

48. (Previously Presented) A vane pump as recited in Claim 47, wherein the pump is a variable displacement vane pump and the cam member is mounted for pivotal movement within the interior chamber of the pump housing about a fulcrum.

49. (Previously Presented) A vane pump as recited in Claim 47, wherein the pump is a fixed displacement pump.

50. (Previously Presented) A vane pump as recited in Claim 47, wherein each restrictor is dimensioned and configured to provide a pressure equal to about one half of a pressure communicated thereto by the first and second pressure sources.

51. (Previously Presented) A vane pump as recited in Claim 47, further comprising first and second axially spaced apart end plates disposed within the interior chamber of the pump housing, each end plate having a first surface which is adjacent to the rotor member, each first surface forming an axial end portion of the pumping cavity, each end plate spaced from the rotor member so as to allow rotation of the rotor member with the

pumping cavity.

52. (Currently Amended) A vane pump as recited in Claim 51, wherein the first surface of the first end plate has the mixing chamber and each restrictor formed therein.

53. (Previously Presented) A vane pump as recited in Claim 51, wherein first and second channels are formed in the first surface of each end plate, the first channel being configured to provide a path for fluid to communicate from the first pressure source to the restrictor, and the second channel being configured to provide a path for fluid to flow from the second pressure source to the restrictor.